

FLIGHT

The
**AIRCRAFT
ENGINEER
&
AIRSHIPS**

First Aero Weekly in the World

Founder and Editor: STANLEY SPOONER

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport

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DIARY OF FORTHCOMING EVENTS

Club Secretaries and others desirous of announcing the dates of important fixtures are invited to send particulars for inclusion in the following list:

July 2 ...	Aerial Pageant (Hendon) for R.A.F. Memorial
July 6 ...	Entries close for Aerial Derby
July 16 ...	Inter-Varsity Air Race, Hendon
July 16 ...	Aerial Derby
July 29-31	Jacques Schneider Cup, Venice
Aug. 1-2	Cowes Seaplane Races
Aug. 27 ...	Entries Close for Coupe Deutsch
Sept. 4-11	Brescia Races
Sept. 10 ...	Pulitzer Trophy, Detroit, U.S.A.
Sept. 18 ...	Gordon Bennett Balloon Race
Sept. 25-	
Oct. 2	Aero Exhibition, Prague
Oct. 1 ...	Coupe Deutsch de la Meurthe
Nov. 12-27	Paris Aero Salon

EDITORIAL COMMENT



THE new Air Ministry subsidy regulations, which we print in full in another part of this issue of FLIGHT, seem to us to cover all the necessary ground satisfactorily, in their main lines at least. Naturally, there are one or two minor points which are open to criticism, but as nothing is perfect in this very imperfect world, we need not labour them too much. The main thing is that at last we have a concrete set of regulations, governing the administration of a fixed amount of subsidy to be applied to the development and maintenance of the cross-Channel air services. This is very much to the good, and, even though we could wish that the sum of £200,000 a year, with which the regulations deal, was much larger and of wider application, we must express ourselves as thankful for what has been vouchsafed to the aircraft industry in a time of acute national financial stringency.

The regulations are so clear and full in text that there is no need whatever for us to quote from them here, and a very few remarks in passing will suffice to dispose of them for the time being. There are just one or two points on which the text is not as explicit as might be, and on these we should really like a little more information. For instance, the amount of the subsidy has been fixed, as we have said, at £200,000 a year during the ensuing three years. That is perfectly clear. The regulations go on to say that the Air Ministry is prepared to "approve" firms for the carrying on of cross-Channel air services. To such firms the Ministry is prepared to supply, on what is virtually a hire-purchase agreement, certain aeroplanes of approved type, to be built to the order of the Ministry. There appears to be no limit set to the number of firms who may be approved by the Ministry. Indeed, supposing a firm to be able to show the essential guarantees of its *bona fides*, it is difficult to see how the Ministry could refuse its approval. It is possible, therefore, though we do not say it is probable, that numbers of competing firms should enter the industry believing that they would be virtually guaranteed against loss by the subsidy.

The regulations say that subsidies will be paid to approved firms at the rate of 25 per cent. of their gross takings, providing the necessary number of flights are made. In such case, how far round would the £200,000 be likely to go? It may be that the Ministry has reserved to itself the right to deny approval under the "certain conditions" referred to in (a) of the official *communiqué*, but the point is not clear.

There is a weakness present in the scheme, which we fear is inseparable from any form of subsidy payment. It is that there is apparently very little incentive to efficiency either in machines or organisation. There is encouragement to maintain services up to the limit of the subsidy payments, but next to none to develop and go ahead in the exploitation of new types of machines or the opening up of new routes. This is the principal evil which attends all Government subsidised industries, and cannot be helped. Unfortunately, we have had to argue the case for a subsidy in and out of season, but we have never believed that with the receipt of money from the State the whole troubles of the industry would be over. We do not like subsidies, but in the case of the aircraft industry, having regard to its bearing on Imperial defence, we have taken the line that it was better to suffer from the evil of the subsidised service than to see so important an industry die.

Another Evil

There is another aspect of the subsidy regulations to which attention may appropriately be given. It is made clear that when the net profit made by an approved firm has reached 15 per cent. of its issued capital, in any year, any excess of profit over this shall be repaid by the firm to the Ministry, up to the amount of the subsidy received. This is quite right. The subsidy is given to assist the industry and individual pioneering firms to tide over the interval between now and the time the industry finds itself established and able to stand upon its own feet. It is in no sense intended to be "something for nothing." But the condition introduces the weakness that it may act as an incentive to an unprogressive firm to merely jog along, using inefficient machines, which will just ensure their getting the subsidy. There is a wide gap between the earning of the first 15 per cent. for the shareholders and the payment of any larger dividend, since there is the matter of the subsidy refund to come between. Again, it is not at all certain that this will be the effect of the arrangement. Indeed, we hope and believe that nothing of the sort would take place, but it is only right that the *possible* effect should be realised.

On the other hand, it is still further possible that a firm owning and operating quite good and efficient machines may be deterred by this condition from giving the fullest service within its power. Instead of going all out to develop those services, they could, without doubt, simply operate their machines so as to earn the subsidy, pay their 15 per cent., and avoid making repayments altogether. It seems to us that there is more danger of this than of the other, but, as we have said, there are disabilities inseparable from Government subsidies of all kinds. In this case we think the Air Ministry has made the best terms possible, and we trust that by mutual goodwill and a desire to progress, the Ministry and the industry will be able to avoid the pitfalls and to assist in keeping British aviation where it should be.

M.P.s and Airships

At the end of last week a party of members of Parliament was taken down to Pulham, shown everything of interest on the station, and taken for a flight in "R. 36." At the same time, the enormous possibilities of the rigid airship for commercial use were fully explained by officers who have been intimately associated with airship work for a period of some years, and nothing was, we are assured, left undone to impress them with the potentialities of the airship as a transport vehicle.

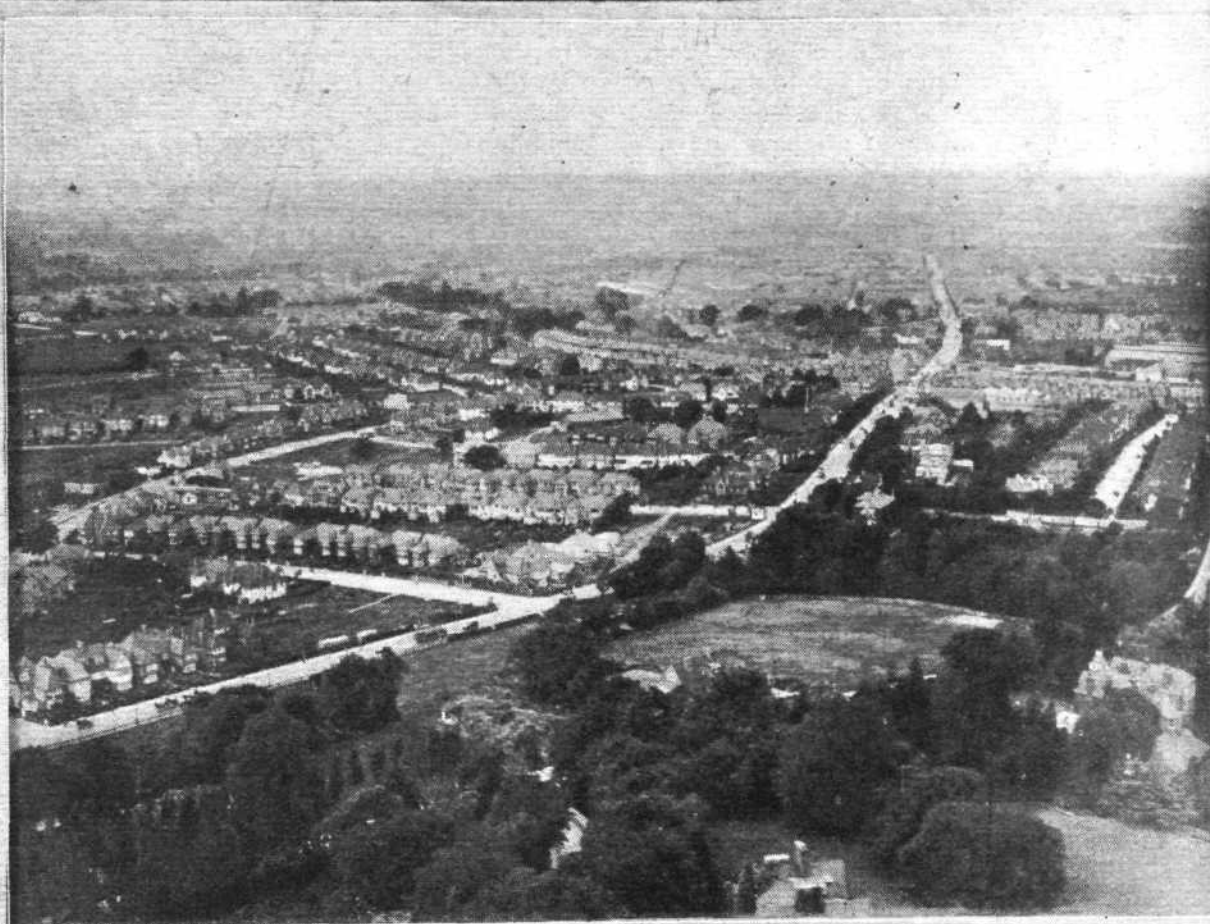
As a rule, we are inclined to look with an eye of suspicion on joy-rides given to members of Parliament, borough councillors, and such, but in this case we can be very much more tolerant of the expenditure of what is, after all, a very small amount of public money in what we regard as an excellent cause. We are drawing near the end of the period set for the existence of the civil airship branch of the Air Ministry. The fiat has gone forth—though just how seriously it is meant we do not know—that unless something is done with the airships very shortly, they, together with all spares, stores, and surplus material, must be handed over to the Disposals Board. What will happen then we know only too well. The magnificent airships, once the pride of the Air Service, will probably be broken up and disposed of as so much junk. This would be a disaster of the first magnitude, and one to be avoided by all possible means. If it can be avoided by taking fifty members of Parliament, or the whole House of Commons, for a joy-ride, then we should consider the money well spent.

Seriously, it is just as well to endeavour to create an atmosphere of interest in Parliament. There is the proposal of the Agent-General for New Zealand, discussed in these pages a week ago, to come up for consideration by the Imperial Prime Ministers. If anything should come of their discussions, we take it the necessity would arise for consulting Parliament as to the part to be taken by this country in developing airship services within the Empire. The more, therefore, the individual member knows at first hand, the more likely he is to be well disposed towards such a scheme. Gen. Sykes and his able band of assistants are doing very well in their efforts to keep an airship service in being, and we wish them all success in the task.

The Department of Civil Aviation

The half-yearly Report on the Progress of Civil Aviation has just been issued as a White Paper. It covers the period from October 1, 1920, to March 31, 1921, and although the Report bears the title we have quoted, it, unfortunately, records very little that we can justifiably call progress in British civil aviation during the period under review. We publish a brief summary of the Report in another part of this issue of *FLIGHT*, from which our readers will be able to gather some of the more salient features.

On the material side, steps have been taken to improve the ground organisation at the Customs stations at Waddon and Lympne. The installation at the former aerodrome of a night-lighting system to permit regular night-flying has been nearly completed, and steps have been taken to erect two new aerial lighthouses on the English section of the London-Paris air route. On the scientific and meteorological sides, considerable advance has been made in several



Copyright, Handley Page, Ltd.

LONDON-PARIS, FROM THE AIR, No. 2 : As seen from a Handley Page machine.
At top, Golder's Green, and below, Shepherd's Bush. In the latter the rows of houses might well be mistaken for trains on a curve or piano hammers.

directions. Notably some progress has been made in the investigation of the use of metal in the construction of aircraft, particularly as regards metal propellers, wings, struts, spars and *fuselages*. Progress has also been made in engine development, with particular regard to direct fuel injection, supercharging and the development of engine-starters.

All of which is satisfactory, as far as it goes, but we miss the record of the opening up of new services, the awarding of mail contracts to air lines, and all the evidences which, two years ago, we had hoped to see by this time of a healthy, strong, British aviation industry built up on the strong foundations of the aerial supremacy so hardly won in the War. Instead, we have to content ourselves with the melancholy record of the fact that while British air traffic on the cross-Channel services was, during the previous six months, four times as heavy as foreign, in the first three months of 1921 it had fallen to one-fourth of the volume of foreign traffic. This, of course, was due to the temporary cessation of the British air services. Since the re-starting of these services, the balance has probably swung the other way, though the Report says nothing as to this.

During the period under review the machine mileage for civil aviation was 212,200 miles, the number of passengers carried 10,103, and the weight of goods 38 tons, as compared to 689,600 miles, 32,345 passengers, and 86½ tons for the previous six months. It is significant that the value of imports by air has only fallen from £376,606 to £305,831, and of exports from £168,300 to £167,731. Principally owing to the depression in the air transport industry, and partly to the weather conditions prevailing during the winter months, there has been a falling-off in the efficiency of the outward mail services, and, although there has been an increase in the number of letters posted for transmission by air mail on the London-Paris and London-Brussels routes, this was mainly accounted for in the first two months.

Though the ratio of 0.30 passengers killed per 1,000 carried is slightly in excess of that for previous half-yearly periods, there was only one fatal accident during the six months under review.

Progress Abroad

A section of the Report is devoted to the progress of civil aviation in foreign countries. From this it would appear that France is still remarkable for showing the greater vision, and for her efforts to achieve and maintain a lead in commercial aviation. It is quite clear that Germany, hampered though she is by the provisions of the Peace Treaty, is simply waiting the time when she will again have a free hand to develop aerially, when she too will make another determined bid for the

premier place among the nations that fly. All over the world it is manifest that the entering of aviation into the lists as a competitor of older transport methods is being recognised to the full. Even China is, as we have before pointed out, inaugurating a regular aerial mail service between Peking and Shanghai, which, in the course of six months, it is hoped to develop into a goods and passenger carrying enterprise.

It is by no means flattering to our *amour propre* to find that nations which we have hitherto regarded as non-progressive to the *nth* degree are bearing a full share in the development of aerial enterprise. Of course, it has to be conceded that such countries, owing to their geographical situation and the paucity of rapid means of ground communication, must look more to aviation for the quickening of communications than a country like our own, which has ample means of transport with the advantages of comparatively short distances to be traversed. But even when all allowances are made, the comparative rates of progress are not flattering to ourselves.

An Inter-University Air Race

The difficulties which stood in the way of an air race between representatives of the two Universities of Oxford and Cambridge have been overcome, and such a race, between teams of three representing each University, will be flown over a circuit having its starting point at the Hendon Aerodrome on July 16, before the Aerial Derby. We have always been in favour of such an event, because the more the spirit of competition can be fostered in aerial matters the better it must be for progress. Therefore, the more races and competitions we can see organised the more cumulative effect the sporting side must have on the material progress of design in particular and the industry generally. Not only so, but, as we have argued so many times in the past, the effect on the public of the publicity given to aviation by all such events as this University race, must assist in no small measure to bring about that state of mind which is essential to the success of commercial aviation. Without the necessary confidence on the part of the man in the street, commercial aviation can never make headway, and there is nothing so well calculated to produce this confidence as successful sporting events.

We sincerely congratulate the Royal Aero Club on the success of its efforts to bring about this race, and on the public spirit it has displayed in making the arrangements. We are breaking no confidence when we say that the whole of the expense and trouble of organising the event are being borne by the Club.

A Man-Power "Flight"

THAT 10,000 francs prize offered some years ago to the first person who by means of his own power is able to "fly" when aboard a machine—bicycle, or otherwise—in France called an "aviette," is still being fought for. Gabriel Pontain is the latest to again try his powers, on a bicycle fashioned after the plan of a biplane. With this last week, at Longchamps, he managed to "fly" a distance of 10 yards at a height of 18 inches, and he has hopes now of, when officially observed, lifting the prize by fulfilling the conditions of flying the 10 yards in both directions without the use of a motor. And we wish him every success; but why, even if he does it, he should be bracketed with men like Ader, the brothers Wright and Santos Dumos, we fail to appreciate. At best this sort of thing can only result in certain trained

athletes accomplishing glorified jumps through the air, and with the wildest stretch of the imagination cannot justify the conclusion (as one enthusiastic reporter puts it) that "the experiments justify the hope that the problem of flying without a motor will be solved."

Customs Duties on Aircraft

AIRCRAFT when imported into Finland as complete units, or in parts which, when assembled, comprise a complete machine, are dutiable for Customs purposes under item 700 of the Customs tariff, *i.e.*, as machines and appliances not specifically mentioned, upon which the import duty is 10 per cent. *ad valorem*. Aircraft parts imported separately are dutiable according to the materials of which composed. A special licence must be obtained from the Ministry of Trade and Industry for the importation of aircraft into Finland.

THE CROSS-CHANNEL AIR SERVICES

Subsidy Revised and Extended

THE Air Ministry last week issued a *communiqué* setting out new terms upon which the State proposes to assist the cause of commercial flying, embodying the proposals which emanated from the Committee appointed by the Secretary of State for Air, to make recommendations for ensuring the maintenance of air-transport on cross-Channel routes. These have been adopted by the Air Council, and have received the approval of the Treasury.

The intention of the Air Council is that there may be no break in the services on the London-Paris routes being operated by Messrs. Handley Page, Ltd., and Messrs. S. Instone and Co., Ltd., under the present temporary scheme, and the operation of services on the route by "approved" firms under the new scheme. The recommendations which are now to come into operation are that:—

a. Firms should be "approved" by the Air Ministry on certain conditions for the operation of agreed cross-Channel routes.

b. Orders should be placed by the Air Ministry for aeroplanes of modern commercial types to be hired out to "approved" firms.

c. A subsidy of 25 per cent. should be paid by the Air Ministry on an "approved" firm's gross earnings.

Applications are now invited from those who wish to be recognised as "approved" firms by the Air Ministry and to participate in the scheme described below.

With the approval of the Lords Commissioners of H.M. Treasury, a sum of approximately £200,000 per annum will be set aside from Civil Aviation votes for three years. This sum of £600,000 (including expenditure on the temporary scheme now in operation, which will not exceed £50,000) will be used for the following purposes:—

a. The Air Ministry will order a limited number of machines for transport purposes, embodying the latest improvements suggested by experience. These machines will be let out on hire to "approved" firms to augment their fleets.

b. The Air Ministry will grant subsidies during the same period of three years on the basis of 25 per cent. on an "approved" firm's gross earnings operating on any of the following routes: London-Paris, London-Brussels, London-Amsterdam. (Further routes may be approved at a later date.)

under the conditions referred to below, with the proviso that when in any financial year of the firm concerned the net profits (inclusive of subsidies) arrived at after full allowance for depreciation and any other charges agreed to by the Air Ministry would permit a payment of over 15 per cent. of the total subscribed cash capital to be employed on these services, the balance in excess of the 15 per cent. shall be refunded to the Air Ministry up to the limit of the amount received as subsidy.

The Air Council propose that the following regulations should govern the hiring out of machines:—

1. The number of machines to be ordered by the Air Ministry will be limited by the amount of money available.

2. The specifications of the machines to be ordered by the Air Ministry will be drawn up after consultation with representatives of the firms approved.

3. The machines after completion, and after having passed the preliminary trials satisfactorily, will be available for hire under the conditions stated below.

4. Firms operating these machines will be required to insure them, in the name of the Secretary of State for Air, at a value to be stated in each case by the Air Ministry, against loss or damage by accident resulting from operation in addition to normal insurance against fire, etc., and to maintain them in an airworthy condition subject to fair wear and tear.

5. a. Firms operating will be required to pay the Air Ministry a monthly rental equivalent to 2½ per cent. of the cost of the machine.

b. After 30 such payments have been made the machines will become the property of the firms.

The conditions under which firms may be accepted by the Air Ministry as "approved" are as follows:—

i. a. *Personnel*.—The companies, directors, shareholders, pilots, members of the crews, and the mechanics employed in England must be of British nationality.*

b. *Aircraft, Engines, etc.*—The aircraft and engines must be of British design and manufacture, and the aircraft must be of British nationality.*

c. *Regularity of Service*.—Forty-five completed single journeys in each direction on any one route during each period of three months are necessary in order that a firm may qualify for the subsidy, but on any one day flights need not be made in both directions, and only one flight in the same direction will count as a qualifying flight.

d. *Speed*.—All flights on the routes so far approved must be completed within four hours to count for qualifying purposes.

ii. *Tariff*.—The tariff charges and any amendments thereto must be approved by the Air Ministry.

iii. *Accounts*.—a. Approved firms will be required to render to the Air Ministry monthly statements showing their gross earnings for the month on each route operated by them. In addition with each such statement will be required a certificate to the effect that no rebates of any kind have been granted, or are due, except as specified in the accounts.

b. Payment, on account, not exceeding 20 per cent. of the firm's gross earnings from the carriage of passengers, goods, parcels and mails will be paid by Air Ministry monthly, subject to final verification of the information supplied by the firm and subject to annual adjustment of the amounts paid by the Air Ministry so that the total annual payment as subsidy will be 25 per cent. of the firm's gross earnings.

c. Approved firms will be required to keep their accounts in such a form that the gross earnings and running costs of individual machines on individual flights can readily be identified.

An annual balance-sheet certified by auditors, together with profit and loss accounts and records showing full details of cost of starting, maintaining and operating the services for which the subsidy is claimed, must be produced for examination by the Air Ministry, who will also have access to the firm's books, receipts and other documents in support of their claim before the final sum due for the year will become payable.

The Air Ministry will provide:—

a. Meteorological information and ground wireless services, free of charge, at the Government aerodromes.

b. Terminal and emergency aerodromes in Great Britain, together with all aerodrome facilities, including lighting, etc., so far as the Air Ministry funds permit, subject to the payment of the recognised charges.

The Air Ministry invite those who are interested in the commercial development of aerial transport services to submit proposals to the Secretary (C.G.C.A.), Air Ministry, Kingsway, W.C.2, for consideration not later than Monday, Aug. 1, next.

Proposals submitted should state the amount of subscribed cash capital that will be employed on the undertaking, the number and types of machines proposed to be operated, the number of pilots proposed to be employed, together with information concerning the previous experience of the promoters and management in aerial transport and any other information which may help the Air Council in the selection of a limited number of firms that could be assisted within the limits of the money available.

The Air Council reserve the right to accept or refuse any proposal submitted.

* Unless under special conditions where permission has been given in writing.

The Oxford and Cambridge Air Race.

PLANS for the Oxford and Cambridge Air Race have now definitely materialised, and it seems that this event, which is to take place on July 16 (Aerial Derby Day) at Hendon, has every prospect of being as popular in the world of sport as its older and aquatic prototype. It is to be a cross-country team race, each University putting up a team of three pilots, all flying S.E. 5 machines. The actual course to be flown is to be kept secret until the morning of the race, but it will be a circuit of about 30 to 40 miles, which is to be covered

three times, with Hendon aerodrome as the starting point. The machines will be lined up and will start all together, just before the Aerial Derby. As in ordinary cross-country team racing, the winner will be the team obtaining the minimum aggregate total of place numbers. It will be seen, therefore, that the race should provide plenty of excitement, and is thoroughly "sporty."

It should be mentioned that the Royal Aero Club is bearing the whole of the expenses, including machines, insurance, petrol, etc.

A DAY OUT IN THE "R. 36"*

[DURING the traffic-control operations of "R. 36" in connection with the Ascot Races on Tuesday, the 14th inst., a representative of FLIGHT was, through the courtesy of the Air Ministry, one of the 25 passengers (over and above the crew of 37). We give below his experiences of this flight, in order that our readers may faintly realise what this new and fascinating form of travelling is like.—Ed.]

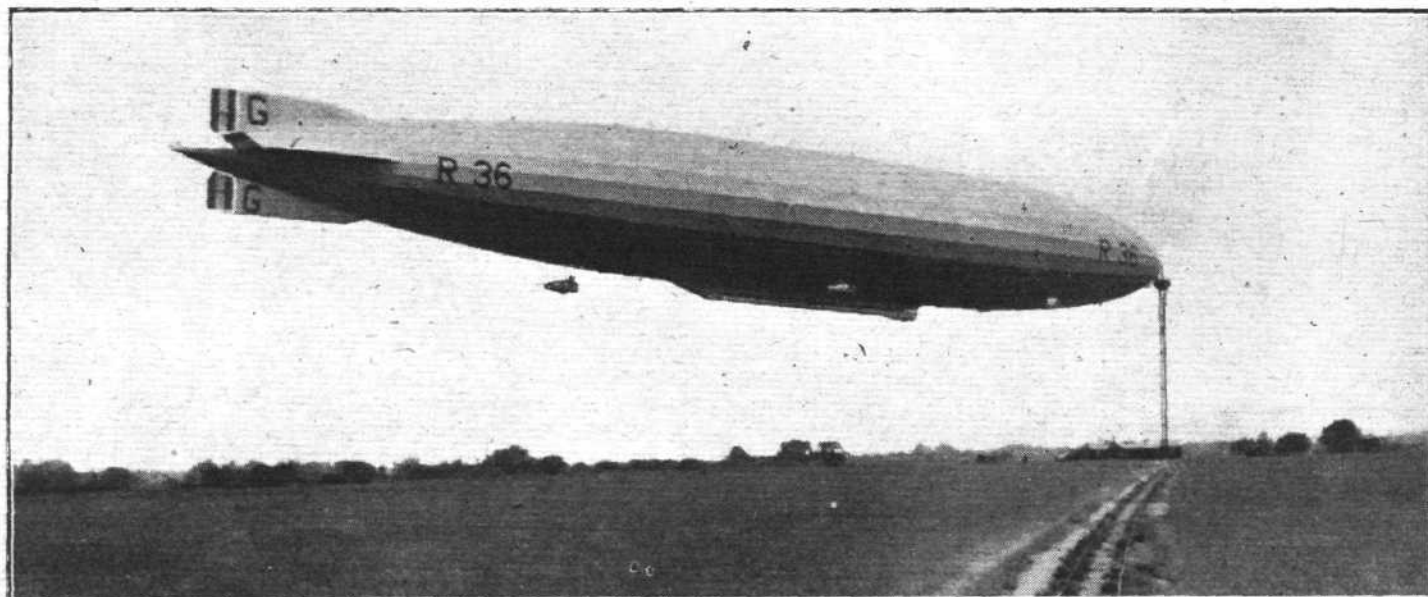
"Five forty-five, sir: breakfast will be ready in a quarter of an hour." With this little reminder from the Orderly, the proceedings for the day commenced. Having enjoyed a substantial breakfast, I strolled, in company with Col. Pace, towards the mooring mast at Pulham. The ship looked magnificent in the morning light as she moved lazily in the slight breeze, and one could not but marvel at the sight of this huge, metallic-looking mass being held securely by such a frail-looking mast. This mast is certainly some "brain wave," and will undoubtedly form an all-important—if not essential—part in future commercial airship services.

Of course, the mast at Pulham is only in the experimental stage, and possesses no other means of ascent or descent than by ladders—which require a certain amount of nerve to tackle.

However, by 7 a.m. I had safely negotiated the 120 ft. of mooring mast, crossed from its platform—over what seemed nothingness—down the gangway, through the opening in the

The real purpose of the trip was to control the traffic on the roads leading to Ascot racecourse. This soon becomes very monotonous, going over the same ground time after time, so after a cup of excellent soup at 11 o'clock I amused myself working out the speed of the ship by counting the number of seconds that passed while we travelled the length of the ship's shadow on the ground. I found we were doing approximately 50 miles per hour. No. 1 of the *Airship Mail*, published that day on board, kept us in touch with the more important events happening in the "under world"—the news being sent by wireless from special "land correspondents." At 12 o'clock lunch was served—and, by the way, if anyone is suffering from loss of appetite, I am quite certain an airship trip would cure him. The "O.C. grub," evidently, was well aware of this, for I do not think the veriest gourmet could complain of ham and tongue, salad, bread, beer, fruit salad, biscuits and cheese, and butter!

After lunch we explored the country farther south, and then, turning, came up to Croydon aerodrome, where a parachute was dropped with the newspaper correspondent's reports. Having watched the parachute reach its destination, we steered for a trip over London, and really one was amazed at the disreputable spectacle it presented. I surmised it was a hot stuffy day away down there, for there was a thick haze, and the almost unrelieved black of the buildings looked hot



"Flight" Copyright

"R. 36" tethered," before being cast off for her Ascot traffic control flight.

nose of the airship's hull, descended along the "catwalk" beneath the gas bags, and finally was comfortably installed in the passengers' cabin. Comfortably is the right word, for the cabin is exceptionally well appointed—arm-chairs, tables and bunks for everyone, in addition to there being plenty of room left to stroll about.

A musical selection on the engine telegraphs lasted from 7.20 until 7.28, when, slipping our moorings and gradually rising, we turned our nose south-west, without practically any sensation of movement in so doing.

During my short span of years I have journeyed fairly long distances by boat, train, motor-car, and aeroplane, but never experienced such travel-comfort as in an airship—no dust, no smoke, no sway, no draught, very little noise, and practically no vibration. We could sit in our arm-chairs—or stroll about—and talk without the slightest difficulty. Many of my fellow-passengers had brought typewriters (the instrument sort) with them, and rattled away on them as if in some city office.

On leaving Pulham we followed the railway for some distance over Suffolk and Essex—somewhat uninteresting country, being very little else but cultivated fields. The outskirts of London were first touched over Enfield, then Wood Green, and across to Shepherd's Bush, then, following the river from Hammersmith, out into the country again.

* "R. 36" was described and illustrated in FLIGHT for May 19 last.

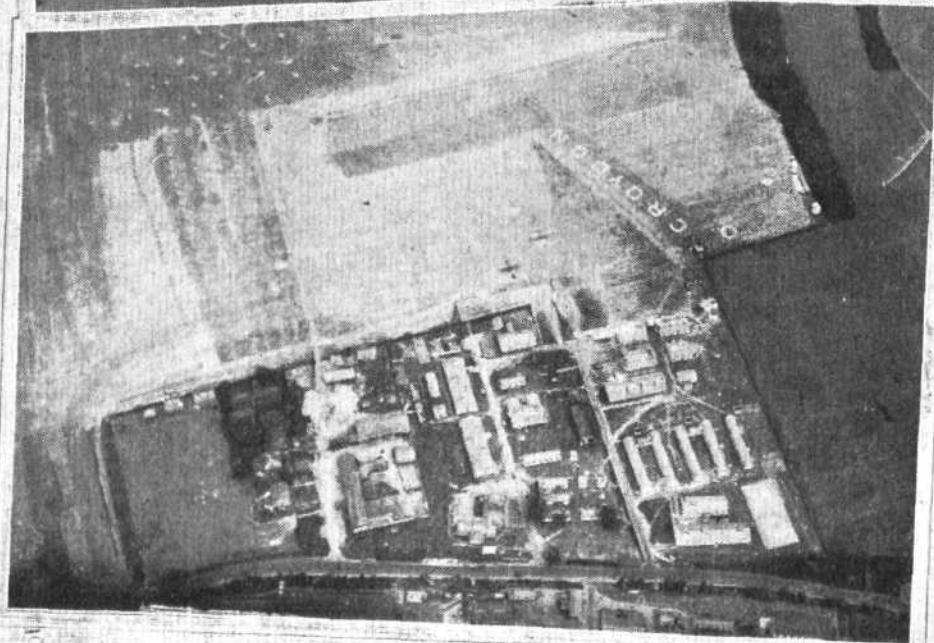
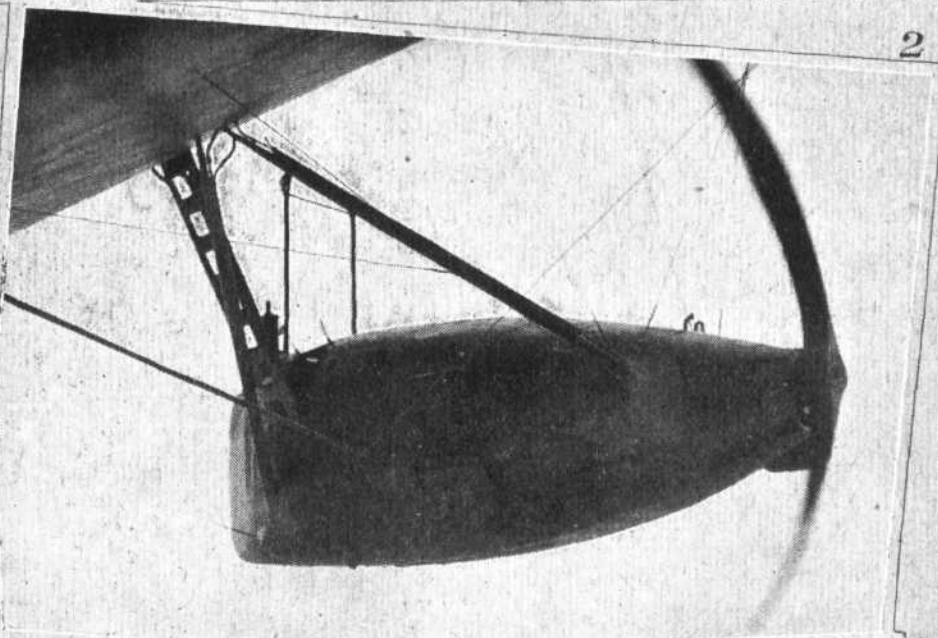
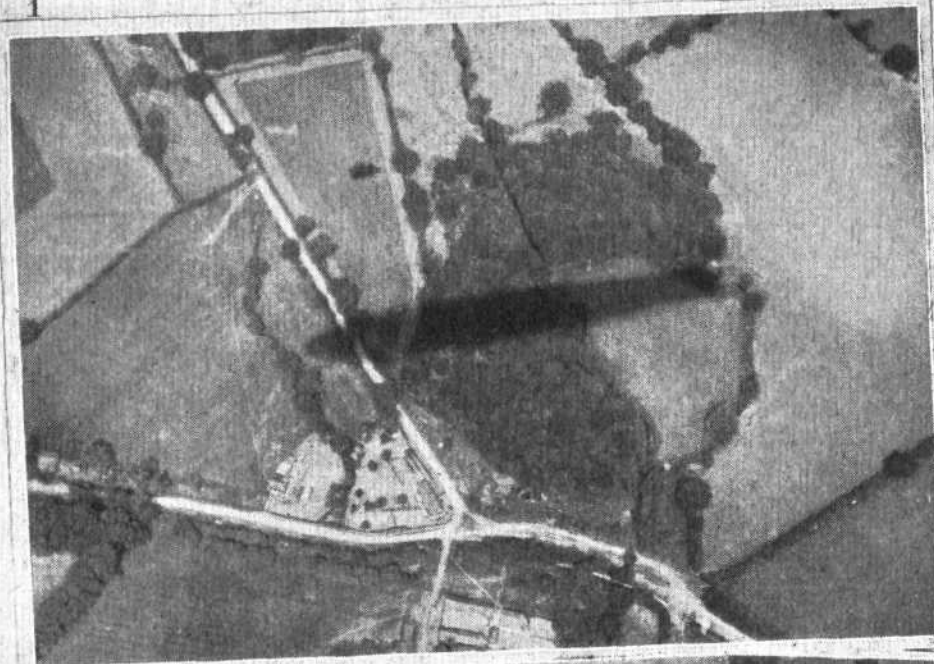
and depressing. Turning over Lord's Cricket Ground, we moved off to control the homeward traffic from Ascot, and though we could plainly see all the cars, etc., on the road, one feels so superior to those ant-like creatures that interest soon vanishes—so I had "forty winks"!

Like the cure for lost appetite, I suggest an airship trip for insomnia.

Tea arrived at 4 p.m. on the same acceptable scale as lunch, and we then journeyed to Croydon again and released another parachute containing further reports for the Press. We then made for Pulham, it being by this time about 6 p.m. The mast first hove in sight about 9.10, and the ship was safely moored by about 9.55. Two searchlights were played on the nose of the ship, and the gangway run out for the passengers to cross on to the mast, by which we landed, the good ship "R.36" having taken us some 580 miles during the course of the day.

A dark shadow, with the nose brilliantly illuminated, against a rich violet sky, presented a picture I shall not forget in a short time—it was certainly, for me, the end of a perfect day.

Maj. Scott, of "R.34" fame, was in command. Capt. Irwin, Flight-Lieut. Montague and Flight-Lieut. Goddard were his officers—splendid fellows all of them, who have a way with them of inspiring confidence in the worst of "land lubbers."



"R. 36" LOOKS AFTER THE ASCOT TRAFFIC: (1) Our shadow, by which we were able to time our speed over the land. (2) The forward power unit, but the propeller is *not* the shape it *appears* to be. That is the result of a problem involving relative speeds between the prop. revs. and the action of the focal-plane shutter. (3) Over Croydon Aerodrome. (4) The "Press" parachute just after leaving "R. 36" for Croydon Aerodrome. It was only press messages which descended thiswise, not the Press!

"Flight" Copyright

The Royal Aero Club of the United Kingdom

OFFICIAL NOTICES TO MEMBERS

ROYAL AIR FORCE PAGEANT

THE Royal Air Force Pageant will be held at the London Aerodrome, Hendon, on Saturday, July 2, 1921.

Tickets 10s. and 5s., and Motor Car Tickets 5s., may be obtained from the Royal Aero Club.

Members of the Royal Aero Club have been made Honorary Members of the London Country Club, which adjoins the Aerodrome, on the day of the Pageant, and will be able to obtain Luncheon and Dinner at the Club. Tables should be booked in advance. Telephone 260 Kingsbury.

AERIAL DERBY AND FIRST AIR RACE, OXFORD v. CAMBRIDGE

THE Aerial Derby and the first air race between Oxford and Cambridge Universities will be held at the London Aerodrome, Hendon (by arrangement with the Grahame-White Company), on Saturday, July 16, 1921, commencing at 2.30 p.m.

Entries for the Aerial Derby close on July 6, 1921.

The Handicapping Committee for the Aerial Derby has been appointed as follows:—

Wing-Comdr. E. F. Briggs, D.S.O., O.B.E., R.A.F.

Sqdn.-Ldr. R. M. Hill, M.C., A.F.C., R.A.F.

Maj. T. M. Barlow, A.M.I.C.E.

Capt. R. J. Goodman Crouch.

For the Oxford and Cambridge Race the Club is providing each University with three S.E. 5's, fitted with Viper Hispano-Suiza engines.

The three pilots to represent each University will be selected from the following:—

Oxford.

A. K. Boeree (Oriol).

A. V. Hurley (Kemble).

N. Pring (New).

S. M. Brown (B.N.C.).

J. A. I. Hardman (Hertford).

A. S. Hett (Oriol).

Cambridge.

H. A. Francis (Caius).

C. O. B. Beale (Trinity).

I. A. J. Duff (Trinity Hall).

R. K. Muir (St. Catharine's).

W. S. Philcox (Caius).

S. H. Starey (Trinity).

The six machines will be started together, and will fly three times round a circuit of between 30 and 40 miles, passing over the Aerodrome at Hendon on each circuit.

THE FLYING SERVICES FUND

(Registered under the War Charities Act, 1916)

Administered by the Royal Aero Club

For the benefit of Officers, Non-Commissioned Officers and Men of the ROYAL AIR FORCE who are incapacitated while on duty, and for the widows and dependants of those who are killed or die from injuries or illness contracted while on duty.

Honorary Treasurer:

The Right Hon. LORD KINNAIRD.

Committee:

H.R.H. THE DUKE OF YORK, K.G. (Chairman).

Lieut.-Col. A. DORE, D.S.O.

Mr. CHESTER FOX.

Squad.-Leader T. O'B. HUBBARD, M.C., R.A.F.

Group-Capt. C. R. SAMSON, C.M.G., D.S.O., R.A.F.

Secretary:

H. E. PERRIN.

Bankers:

Messrs. BARCLAYS BANK, LTD., 4, Pall Mall East, London, S.W. 1.

Subscriptions	£	s.	d.
Total Subscriptions received to June 13, 1921	17,236	3	1
Miss Eleanor Bairdsmith	1	1	0
Collections at recent Church of England Parade Services at some Royal Air Force Stations in both the Inland and Coastal Areas	14	16	3
Total, June 20, 1921	17,252	0	4

Offices: THE ROYAL AERO CLUB,
3, CLIFFORD STREET, LONDON, W. 1.

H. E. PERRIN, Secretary.

R.A.F. AERIAL PAGEANT

ARRANGEMENTS for this great festival at the London Aerodrome, Hendon, on Saturday, July 2, are shaping well, and the programme will be of an even more fascinating variety than the last great Pageant.

Apart from the extensive preparations which are being made for the spectacle, the catering, seating, and all arrangements for the comfort and easy transportation of the public, are being based on the attendance of 100,000 people. Last year, in spite of the unforeseen rush of the public to be present, over 60,000 were accommodated. Prices of admission will be from 2s. to 10s.

The programme will include the following spectacular flying events:—

A model village, specially constructed to scale upon the aerodrome, will be attacked by a formation of bombing machines, and demolished in flames. This spectacle, which could only be equalled in actual warfare, will be produced within full view of the public.

Every effort has been made to attain realism, and the village prior to its destruction, will be complete in every detail, surmounted by a church spire over 40 feet high.

Miss Sylvia Boyden will carry out a double-drop parachute descent from an aeroplane in flight. After leaving

the machine by diving through a trap door, she will cut her first parachute adrift, and will fall through the air unsupported, finally making a landing upon the aerodrome by means of a second parachute.

Two large twin-engined bombing machines will be attacked by a formation of four scouts, which, after an exciting display of fighting tactics, will send their less mobile opponents to the earth (apparently) in flames.

A kite balloon will be attacked by scouts, and sent to the ground burning.

Major Sandbags, the "Safety First" parachutist, will make a descent by parachute from the balloon, prior to its destruction.

It should again be noted that the Aerial Pageant is an integral and important part of the annual training of the Royal Air Force, and fulfils the same functions as does the Royal Tournament in the case of the Army and Navy. The different types of squadrons, such as fighting, bombing and reconnaissance, which carry out the varied work of the Royal Air Force are brought together, and gain the keen stimulus to efficiency which is provided by inter-unit contests and displays carried out before a critical audience. As in the case of the Royal Tournament, all the proceeds are devoted to Service charities.

NOTICES TO GROUND ENGINEERS

Correction to No. 3 of 1921

It should be noted that the word *sump* in line 4 of the first paragraph should be amended to read *sun*.

Throttle Control for Napier "Lion" Engines

It is highly desirable that all aircraft fitted with Napier "Lion" engines with a compression ratio of 5.5 to 1 or 5.8 to 1 should be provided with an approved Gate type throttle control, with the object of limiting, in normal conditions, the travel of the throttle lever at altitudes below 5,000 ft.

In such cases a warning plate should be displayed in the pilot's cockpit to the following effect:—

"The throttle control lever must not be moved through the Gate except when above 5,000 ft. or in cases of emergency."

Attention is also drawn to the fact that propellers for such aircraft should be so designed as to allow the engine to run at 1,800 r.p.m. on the ground as a minimum.

(No. 6 of 1921.)

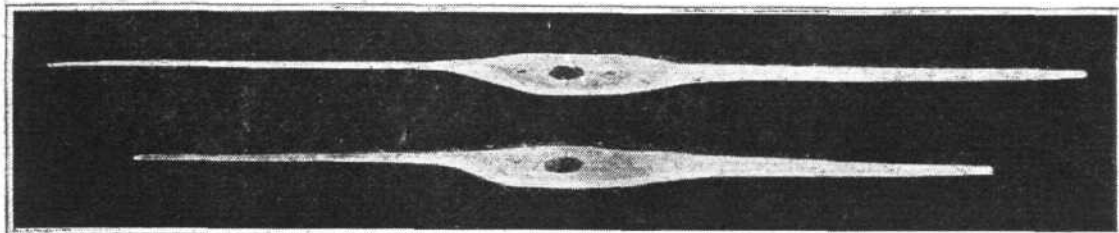
SUPER-SPEED PROPELLERS*

Air Screws with Blade Tip Velocity Above that of Sound

AIR propellers are rarely driven with a tip speed even as high as 950 ft. per second, and there has been a view current among aeronautical engineers that a critical point exists at or near the velocity of sound, say, 1,100 ft. per second, which would act as a physical limit and beyond which there would occur something like what is known with marine propellers as cavitation. Apparently the only published attempts to explore the region of higher speeds are those which appeared in a paper issued March, 1919, by the British Advisory Committee for Aeronautics, in which a tip speed of 1,180 ft. per second was reached with a two-blade nine-foot propeller, when the observation was made that "as the tip speed approaches the velocity of sound the usual air flow entirely breaks down, the slip stream rapidly diminishes,

through that velocity. This result was obtained up to a velocity of nearly 1,600 ft. per second, beyond which he did not continue his researches for the time being. Mr. Reed then had his models and testing apparatus reproduced on a working scale capable of absorbing 100 h.p., at the factory of the Curtiss Airplane and Motor Corporation, at Garden City, L. I., and Mr. Gilmore, Chief Engineer, placed the tests in charge of the Director of Research, Mr. Arthur L. Thurston, under Mr. Reed's direction.

The Curtiss engineers found Mr. Reed's laboratory results fully verified, and the accompanying plot and photographs illustrate the test made April 6, 1921, with the 4-ft. propeller seen in the cut and which reached a tip speed of 1,508 ft. per second with a thrust of 186 lbs. This is 36 per cent.



17-in. and 22-in. thin-bladed metal propellers, used in the early experiments of 1915 and 1916.

and ultimately vanishes when the velocity of sound is reached. Air then appears to be sucked in on both sides of the disc and exhausted at or close behind the periphery; presumably the thrust of the screw under such conditions becomes exceedingly small and may possibly vanish."

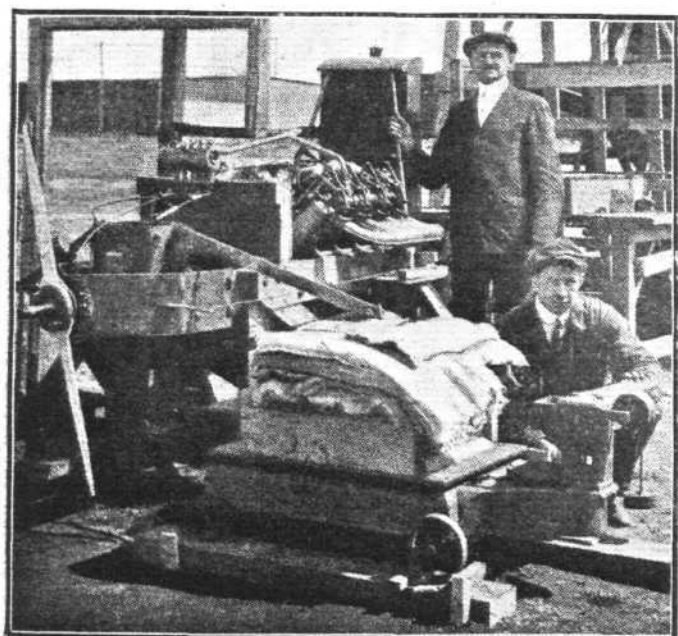
Mr. S. Albert Reed, Ph.D., a retired engineer, while engaged in 1915 in private research work on acoustic pitch of high frequency, employed an apparatus which had a shaft rotating at over 600 revolutions per second, carrying a hub with radiating arms of thin metal with sharp edges. He observed

beyond the velocity of sound, and is something between the speed of a revolver bullet and that of a rifle bullet.

The formula for centrifugal force, if applied, will show that with a propeller of 2 ft. radius and a peripheral speed of 1,000 ft. per second, 1 oz. will give a radial tension of about 1,000 lbs., and at 1,500 ft. per second, about 1 ton. It is evident that a virtual or kinetic rigidity is thus supplied, which may sufficiently replace the structural rigidity of the usual air propeller and make possible a blade sufficiently thin and sharp to function properly at these enormous speeds.

At the ordinary speed of about 600 ft. per second, the usual rather bulky and blunt propellers sufficiently meet the conditions; but apparently they are not adapted to the super-speeds, which may be placed as beginning at about 850 ft. per second.

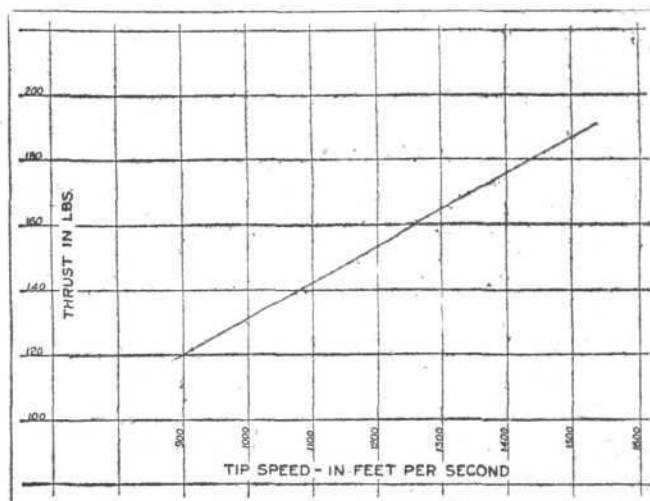
In order to ascertain the efficiency of this type of propeller



Test at Curtiss plant, April 6, 1921, of a 4-ft. propeller, which reached a tip speed of 1,508 ft./sec., with a thrust of 186 lbs.

that centrifugal force supplied the necessary rigidity to the arms. It then occurred to him that the field of high speeds for air propellers might be explored by a similar method, and he proceeded to conduct, systematically, a long series of experiments with propellers 20 ins. in length. He used a 10 h.p. electric motor of 1,150 r.p.m., geared up 12½ to 1 to the propeller shaft, which therefore rotated at 235 r.p.s. The apparatus was carefully designed to permit accurate measurements of thrust, torque and speed, and he ascertained that the supposed physical limit at the velocity of sound does not exist, but that in fact the ratio of thrust to tip speed undergoes no appreciable variation in passing

* Scientific American.



Graph showing results of test of Reed's thin-bladed high-speed propeller, in which there was a steady increase of thrust as the blade-tip speed rose from 900 to over 1,500 ft./sec.

for actual flying the experiment illustrated in the cuts was repeated under approximately wind-tunnel conditions, the wind being supplied by an aeroplane anchored close in front of the Reed propeller and delivering its slip stream axially down the slip stream of the Reed propellers, the wind velocity being carefully plotted with a Pitot tube, at about 42 m.p.h.

The efficiency factors so determined were found to be high, and a 9-foot propeller of the same design is now nearly ready for testing without gear on an aeroplane, and both on the ground and flying.

Mr. Reed has prepared a paper for one of the scientific societies, giving the details of his researches quite fully, and it will be published in the near future; but there appears

to be no doubt that his researches have opened up the field of super-speeds for air propellers, and have proved the non-existence of the supposed physical limit which has to some extent deterred engineers in the design of propellers intended to absorb the horse-power of the very high powered motors. Furthermore, he has opened up interesting possibilities of use with the steam turbine, which operates with extremely high rates of shaft rotation.

Mr. Reed informs us that his results will be covered by U.S. and foreign patents.

[Although opening up vast fields of possibilities, the new thin propellers have yet to be proved under actual flying conditions. One does not imagine that in straightforward flight there is any reason to suppose that such thin blades would not act as described, but what about flutter during sudden turns?—ED. FLIGHT.]

AIRCRAFT IN MESOPOTAMIA

Mr. Winston Churchill's Report to Parliament

DURING the course of an amazingly interesting speech in Parliament on June 14 by Mr. Churchill upon his recent visit to the Middle East, when he spoke in support of the Supplementary Estimates, he referred to the rôle which aeroplanes had been filling in Mesopotamia, and outlined his views upon what was necessary in the future to enable this country to carry out its obligations. In dealing with the Arab Army which had been formed under Jaafer Pasha, the Mesopotamian Secretary for War, which force was engaged taking over and holding the stations from which British troops had been withdrawn, Mr. Churchill explained that behind the various tribal levies which would be absorbed into the Arab Army there would stand at the end of the year about 12 battalions of British and Indian infantry. These, with their auxiliary units, would be sufficient to hold the vital communications of Baghdad and the river communications which connected it with the sea. Last of all, there were arrangements for maintaining public security by means of a powerful air force. There were at present six squadrons of aeroplanes in Mesopotamia, and next year two more would be added.

The extent to which aerial control could be used in substitution of military force was still disputable, but with every month that had passed their confidence in its great utility had been increased. It must not be supposed that aeroplanes had no means of acting except by using lethal force. That, of course, was in reserve. But they hoped that, by their agency, they would be able to keep in amicable touch with the tribes and local centres and ward off in good time movements of unrest, to sustain and, if necessary, relieve detached posts, to keep political officers in close relation with their districts, and to maintain a reasonable degree of order in the country. There was also a squadron of the Air Force in Palestine, and three squadrons in Egypt. Arrangements were being made which would make it possible for aeroplanes to fly regularly to and fro across the desert between Baghdad and Cairo. At the present time, if they wished to move a squadron from Egypt to Mesopotamia, or *vice versa*, the aeroplanes had to be taken to pieces at the port, packed in crates, and taken on a long sea voyage; then unpacked, put together and tried-up for flying—a process which took two

or three months at the least. But once this route across the desert had been marked out, and it was possible for it to be flown in the regular course of affairs, the whole of the Air Force in Mesopotamia could be speedily transported to Palestine or Egypt, or *vice versa*, and be sent to reinforce the Air Force in Mesopotamia.

That might, in the end, be used as a means of securing a reduction of the aggregate number of squadrons they would have to employ. It was going on now, but he was, of course, counting on the friendly sentiment in the desert, and they had every reason to believe they would get it. That was the whole policy. It was to develop a friendly policy with the Arabs, to keep in close touch and sympathy and sentiment with them. He would mention that as all this Air Force had to be on the ground for the purpose of maintaining peace and order, arrangements could be made to fly a certain number of commercial aeroplanes, which could carry mails, and possibly passengers, and, incidentally, if they had a peaceful solution, at which they were aiming, afford a most valuable link in the chain of Imperial communications, which might ultimately result in very great advantage in shortening communication with India and with Australia and New Zealand.

Col. Wedgwood, in criticising the speech, said that, in regard to the Air Service, he understood that eight squadrons of aeroplanes would be employed in Palestine and Mesopotamia. He did not imagine that those eight squadrons were quite useless for that purpose, and it seemed to him that those eight squadrons were getting the very best war training imaginable, that they were the reserve where the British Army ought to be, at the strategic point, at the centre of things, getting their experience of warfare and training themselves for every eventuality. If there were no Mesopotamia or Palestine these air squadrons would be on Salisbury Plain. As it was the charge had been transferred from the Army Estimates and put upon the new baby, the new nurse, and this made up £1,250,000. The troops amounted to another £2,000,000. Really, those items, in the consideration of the Committee, should be deducted from the charge on Mesopotamia and charged to the War Department and back to the Army Estimates.

THE "EAGLE" AERIAL AMBULANCE CRASH

So far no official report is available on the unfortunate accident to the Curtiss "Eagle" aerial ambulance, in which seven persons were killed last May, but the following statement has been issued by the Curtiss Company:—

"W. L. Gilmore, chief engineer for the Curtiss Aeroplane and Motor Corporation, after conferring with Army officers and others, has submitted his report. Judged from the condition of the wrecked plane, from the testimony of witnesses, and from the experience of Capt. B. S. Wright, during the same storm, the following appears to have occurred:—

"The Eagle was in perfect flying condition. All controls were intact and in working order. On the trip to Langley Field it carried about 2,400 lb. useful load, and on the return about 2,000 lb. Its maximum capacity is over 4,000 lb. Therefore the machine was not overloaded. The gale was blowing at probably 90 or 100 miles an hour, and the pilot searched for a place to land. Although the route between Langley Field (Hampton, Va.) and Bolling Field (Washington) is heavily travelled, the route is not charted, and no emergency landing fields have been established. Consequently the pilot, fighting the storm, had to make the best landing possible under the circumstances. He circled Morgantown, headed into the gale, throttled his engine and approached a field surrounded by heavy trees 30 or 40 ft. high.

"What occurred then is deduction. Capt. Wright, with a light, manoeuvrable and heavily-powered plane, skimmed the bowed tops of the trees surrounding another field about seven miles distant. He reports that the gale, flowing over the cleared ground and up and over the trees, created an air current similar to a huge and powerful swell at sea. His plane at first dipped, then rose, then was caught under the tail and sent diving earthward. This plane, a Fokker, has such speed and such manoeuvrability, that it was possible to right it partly before it struck. The result was that only the undercarriage was swept off. Still having flying momentum, Wright rose, then dipped and landed on his nose, but with such reduced speed as not to seriously injure himself, although his plane turned turtle and was wrecked.

"From Capt. Wright's experience, under similar circumstances, it is believed that the Eagle, coming over the treetops, encountered the upward stream of air. The pilot undoubtedly increased his power and elevated the plane. The terrific gale then must have caught the Eagle under the tail and sent it nose down. Although not overloaded, the Eagle, because of its size, was slower than the Fokker to respond to the controls, with the result that it crashed into the earth at a speed of probably over 100 miles an hour."

LONDON TERMINAL AERODROME

Monday Evening, June 20

THE aerodrome is becoming the popular rendezvous of the district on Sundays. The public enclosure is crowded, and a constant stream of people pass in and out. Vehicles of all descriptions arrive, and Plough Lane presents an animated scene. What is more to the point, quite a number of these visitors sample the sensation of flying with the Surrey Services.

Capt. Muir took up 30 joy-riders on Sunday, and business was quite good on Saturday. There is also a trickle of joy-riders during the rest of the week, some of them arriving quite late in the evening. One day last week, for instance, Capt. Muir had taxied his Avro round to the shed, and was just making for home when two people arrived for a flight. The Avro was fetched out, and the day's final joy-ride was accomplished in the dusk.

Capt. Muir tells me he has had many applications from people wishing to be taught to fly, and as soon as he can arrange for his dual-control Avro lessons will commence. The applicants include several ladies.

The Instone Line's daily return service to Paris has been very successful. On Wednesday the Vimy returned from Paris with 11 passengers and 600 pounds' weight of goods and baggage—quite a respectable load. The two D.H. 18's left simultaneously at 10.30 a.m. on Saturday with full loads, and on several occasions during the week the Handley Page 12.30 p.m. service, which, by the way, now runs daily, has had to be duplicated.

Where Air Speed Tells

MR. BARNARD left for Manchester and Belfast on the D.H. 4a this morning. He is to bring photographs of the opening by the King of the Irish Parliament back to London for *The Daily Mail*. This is one of the occasions when the speed of the aeroplane will be brought home to the public, as photographs of the ceremony, air-borne, will be in the next morning's paper.

In connection with this trip, an incident occurred which proves how little a pilot really bothers about his compass. As he has to fly over a considerable stretch of sea, Mr. Barnard was naturally anxious that his compass should be correct, and Mr. Saul spent the greater part of Saturday afternoon in an endeavour to swing it for him. It was discovered, however, that owing to the method of installation it was impossible to fix several of the adjusting magnets without taking the dashboard practically to pieces; also that the proximity of the engine to the compass on this type of machine caused a difference in the compass reading of over ten degrees when the engine was running. When it is remembered that this machine has been in commission since 1919, it is obvious that the compass has been little used or relied upon.

Airship "R.36" visited Croydon twice on Tuesday to drop parachutes with newspaper "copy." On her first visit at about 2 p.m. the parachute was obviously too light and drifted past the aerodrome towards Purley, where it was retrieved by motor-car. When the airship returned in the evening to release the second parachute, those responsible for its release had evidently decided that more weight was required. To provide this they tied three 56 pound weights on to the despatch-bag and launched the whole lot overboard. When the parachute opened, however, and checked the downward rush, the jerk was too much for the ropes by which the weights were tied, and these parted. The weights hurtled earthward and fell in the Wallington recreation ground, which was crowded, narrowly missing some children who were playing there. The parachute descended in the old aerodrome near the airship mast.

Preparing for the Pageant

CONSIDERABLE activity has been observed over Kenley way. Groups of machines have been in the air, flying in formation and performing all kinds of evolutions. Some of the Kenleyites visited the Trust House on Friday night, and informed us that this unusual activity was practice for the Air Pageant.

The Kenley people are also taking liberties with the calendar. As they had the honour of a visit from the Crown Prince of Japan on Whit-Monday, and were therefore on duty in full force, they are making today their Whit-Monday.

A Bristol tourer arrived on Thursday piloted by Mr. Uwins. He is to fly the Bristol monoplane with the Jupiter engine in the Aerial Derby, and during Friday he made flights to various turning points on the Derby course, evidently with the object of making himself familiar with them from the air.

The airship mooring mast is now up to 120 feet, and this

first portion is practically completed, the joiners being busy today putting in the last flight of steps. On the top of this portion the revolving-head will be erected, which is to increase the height of the mast another 24 feet. Two electric capstans are being fitted at the base of the mast in concrete beds. These, I am told, are to be used for winding in the airship, and the old "Rocket" will drive a dynamo to supply power to these capstans. This arrangement makes things more difficult. The explanation given is that the electric power on the aerodrome is alternating current and the capstan motors are direct current; but, even so, there are such things as motor generator sets which would get over the difficulty, and of which the Disposals Board has no doubt hundreds.

The Grands Express now carry the bulk of the midday traffic, as the Handley Page 0-400's are still starting from Cricklewood. The Messageries Aérienne also run a 12.30 p.m. service on occasions, but their machines are small and do not, therefore, loom large in the traffic returns—though they make up for their lack of size by using larger numbers.

M. and Mme. Didier are back from their holiday in France, and assure me they have had a splendid time.

Air Traffic Control

MR. SAUL, the signalling and navigation expert, has invented a new "gadget" for ascertaining rapidly a machine's position from the directional wireless, and has also put up a scheme to the Air Ministry which will enable a pilot to locate his position on the map quickly, without reference to latitude and longitude. I understand the Ministry is considering his idea favourably, and that it is likely to be adopted.

Field telephones are to be fixed, giving direct communication between the searchlights and the control-tower, and all the obstruction and landing lights are to be switched from the tower.

The whole organisation will be in charge of Mr. Saul, acting under orders from the Civil Aerial Traffic Officer on duty. Two new searchlights are to be installed, Mr. Saul having found, by means of calculations, that with the three present lights there are two "blind" areas on the 'drome. The placing of one new searchlight in the south-east corner, and the other near the level-crossing, will eliminate these "blind" areas.

Airway v. Railway

MR. FOX, of Air Express, Paris, was over here during the week and is in despair at the number of bookings he is having to refuse owing to lack of machines. He tells me that the Handley Page service from Paris is booked up for a week or ten days ahead, and that on most days he has to stop booking passengers at an early hour. He expresses the interesting opinion that, in a year or two, the railway companies running services to Paris will be affected seriously by the competition of the "airway."

Mr. Piercy, pilot for the Aircraft Disposal Company, always appears to be going to Brussels. Practically every morning he steps into one of the machines the Disposal Company has sold to Belgium, waves a cheery farewell, and sets off for Brussels. When and how he returns is a mystery.

The daily Press have, incidentally, been making quite a fuss over a forced landing Mr. Piercy had in France, and have attempted to create a mystery with the heading "Vanished Airman." Mr. Piercy is perhaps on the small side, but he hasn't altogether vanished yet.

A great upheaval is taking place near the public enclosure. Heaps of earth, iron tanks, galvanised tanks, workmen, petrol pipes, and sundry odds and ends appear jumbled together in hopeless confusion. When all this is reduced to order it is, I understand, to be the Shell-Mex bulk storage petrol system. Workmen commenced digging holes for the main tank on Thursday, and were even busy on Sunday.

There is little doubt but that the Anglo Company, since they installed their pumping plant, have been supplying practically all the petrol used on the aerodrome, and it is evident that Shell-Mex mean to put a stop to that as soon as possible—hence the feverish activity.

The K.L.M. chief pilot, Mr. Hinchliffe, arrived from Holland during the week to test one of the D.H. 9's which that Company has bought from the old Aircraft Transport and Travel. He has, I am told, been trying to loop the Fokker monoplane, but up to the present the machine has refused to turn upside down.

The K.L.M. have had a further consignment of chickens this week, and have also, in the interests of punctuality, left behind a passenger who arrived a few minutes late.

INDEPENDENT FORCE R.A.F. REUNION

ON Monday evening at the Hotel Cecil the Third Annual Reunion Dinner of the Independent Force R.A.F. was held, the Chair being occupied by the Chief of the Air Staff, Air-Marshal Sir H. M. Trenchard, Bart., K.C.B., D.S.O., Wing-Commander H.R.H. the Duke of York being present to support the Chairman. A highly successful gathering resulted, a gratifying number of members of the force being present to renew memories of their one-time strenuous experiences.

Following the toast of "The King," the Duke of York responded briefly to the toast of "The Queen and other members of the Royal Family," and was very sincere in his expression of hope that he would be able to be a regular attender at the I.A.F. reunion dinners.

Air-Marshal Sir Hugh Trenchard, in proposing the toast of the evening, "The Independent Air Force," said it was the third time for him to have the privilege of proposing this toast, and he again emphasised the necessity for all Independent Force officers to belong to the Club and attend their dinner. He reminded them that it was the great 8th Brigade that really made the Independent Force, and inspired their first effort at independence, and therefore those of them who happened to be what might be called the fathers of the idea of independence should meet together once a year and keep before them the fact that their work was not yet done, or anywhere near done; that was, the work of making the air service first the equal of the older services, and then one day the premier service. That should be their great aim. In striving for that, they must work in co-operation and with the assistance of the older services, for it must be recognised that in some respects they were not yet fully qualified to stand by themselves. He did not, however, suggest that they felt at all shaky on their feet, as they certainly did not.

In regard to what the Air Service had done in the past twelve months, is doing now, and hopes to do in the future, Sir Hugh said he had visited a great number of stations, although he would have liked to have visited far more had not many difficulties prevented him completely carrying out his wishes. The one thing with which he was more than pleased was the manner in which the Air Service was distinguishing itself in all sorts of sport. Although in Rugby football they were beaten by the Navy, they were more fortunate with the Army, and beat them well, which was a good start. In tennis they were coming on, and they were playing polo at Halton, and he hoped soon to see this duplicated in other places in England. With the beagles they were running well, and hunting also. In the Grand National they had a representative, and they were successful in boxing in the recent displays. So well were they doing in sport that one heard everywhere the remark "the improvement of sport reflected in the improvement of personnel." As to the boys at Halton, they were more than coming up to their expectations, and exceeding their greatest hopes. They were getting the right type of boy, and they would, he thought, when arrived at man's estate, enhance and not diminish the fair fame of the Air Force. He was also glad to see excellent officers coming forward at Cranwell. Last year they had their first output, when the then Secretary of State saw them, a historical fact which he wished to have marked, that the first of the boys educated by the Air Force had now gone into the Service. Stations were now getting down to normal, and there was greater stability in appointments and postings, which was likely to improve as they went along. Flying was improving everywhere, and when their reserves were called up a short time ago in connection with the industrial trouble, they came up to a man, irrespective of what their employment was in ordinary life. Hundreds of officers attended and asked to be allowed to help, but it was of course only possible to accept a limited number. There were so many offers, in fact, that he was only able to see a list of their names, much as he would have wished to have seen each one individually, but he took care that every officer who applied was written to and thanked, even if he was not accepted, and he now availed himself of the present occasion to again thank them. In Ireland the Air Force had been of considerable assistance in the prevailing troubles, which all hoped would soon be brought to a satisfactory end; and in India the accounts showed great improvements. Here again sport was well to the fore, and No. 1 Squadron won the Handicap Polo Tournament at Bangalore. The Air Force was small in India, and they had a very strenuous time and much work in clearing up the tremendous accumulation of stores, material, etc. In regard to Egypt, where he had the pleasure of paying a visit for nine days recently, although he only saw a few of the stations, the keenest enthusiasm of all ranks there for the Air Force and the reputation which it had attained were extraordinary,

and he was pleased to see the perfect harmony and close touch with which they had settled down in life in their stations with the officers of the Army. There were many functions in Egypt at which Mr. Winston Churchill and he attended. The Conference on the Middle East, he would mention, turned largely on the availability of the Air Force to undertake control, and he thought they would be glad to know that every hour of the Conference was taken up by the air quite as much as by anything else. All that helped in the education of everybody in matters of air power. At these Conferences he put forward various proposals as to how air power would develop in the East, and he now particularly wanted to point out that he considered the first function of air power was to prevent war. Already he thought he was justified in saying this had been done on many occasions when small wars had been threatened. The swarthy tribesmen had very little stomach for the attentions of the Air Force when they took the form of dropping bombs on themselves and their relatives. The aeroplane was a powerful agent, he contended, to compel submission if—and that was the real point—it was given the time to do it. He did not necessarily contend that they could do it quicker than the ordinary forces, but at least there could be no question that they could do it very much cheaper and in greater economy of life.

Nothing revolutionises war, it had been said, with which he agreed, but it could not be denied that wars constantly grew bigger and bigger, and he hardly thought a first-class war, fought out simply between belligerent armies and fleets, was possible in the future. It would be a war of nations, in which the civil population must take its share in the dangers and hardships of war, and in the words of Bernhardt, "the nation that will win is the nation that has the greater will to win." He was convinced that the service that wielded the power of the Air was the service of the future, and he therefore came back to the beginning of his speech when he said that it was up to them to try to make it the best service of all, in traditions and in spirit and discipline, and all that makes for self-respect.

He regretted greatly not to have amongst them General de Castelnau, the great French Commander, who was so good a friend to the Independent Force. Another face he missed was Capt. La Ferriere, to whom might be largely attributed the great good feeling between the British Air Force and the French authorities. Major Baring, who was too ill, he was sorry to say, to be present, was another absentee. Mr. Churchill had sent a message regretting his absence, but that, although he had severed his connection with the air, they could be assured that he would continue always to do all he could to help it forward.

He was glad to say that they had at last a Secretary of State of their very own, whole and undivided, and it was decided that they must have him at their Reunion as their principal visitor. It indeed gave them all very great pleasure to see him there.

He expressed very warm thanks from himself and from them all for the admirable manner in which Major Toc Smith had arranged everything in connection with that Reunion Dinner, and he coupled with the names of the toast the names of General Dickie and Sir Walter Lawrence.

General Dickie, in concluding his reply, drew attention to the cemetery which had been inaugurated at Charnes in France. He hoped that there would be no cause to think that the upkeep would be neglected. He trusted that it would be looked after for all time, since so many of the R.A.F. who went west found there their last resting-place. It would be preserved, he hoped, for all time to their memory.

Col. Sir W. R. Lawrence, in responding, said that, in looking upon the Force from an outside and unbiassed aspect, he thought when the history of the War came to be written, their children's children would be proud to be descendants of the Independent Air Force, if only for the fact that they were the first who carried the War into the enemy's country. In things generally it was acknowledged there was a very deadly slump at present, but so long as they had their great chief, Air-Marshal Trenchard, associated with the Force, there would be no question about there being a "boom" with them. He concluded by saying that he had worked with some very great men in his time, but he had never known a man who had so completely earned his respect and esteem as Sir Hugh, and in asking them to drink to his health he offered his hearty congratulations to Sir Hugh upon the recent advent of a son and heir.

Sir Hugh Trenchard having thanked the company for their greeting,

Group-Captain C. L. N. Newall, in proposing the toast of



"The Secretary of State for Air," said he was very glad to see the attendance of members was so satisfactory. In regard to the future, he would like to say that it was in view to establish an I.A.F. Dinner Club, and he suggested that this should carry with it a subscription of five shillings per annum. He hoped all members of the I.A.F. would join this club, and thus be able to meet their fellows regularly.

Capt. Guest, in response, thanked the Duke of York for his support of their function, and said how very encouraging it was to all to feel that they could rely upon His Royal Highness's support for their future gatherings. The old country, he thought, was pulling through, and getting now to a more normal condition in spite of the great upsets, but the one requirement that was insisted upon by everybody just now was economy. No doubt by these enforced economies a large amount of the present downheartedness as to the future was created, more particularly with respect to the R.A.F. than the other Services, as the R.A.F. had to be so drastically reduced as compared to the other Services, when the Armistice came, from the immense personnel to the narrow limits which at present had been enforced. But they could afford to be patient for the re-awakening, as it was sure to come.

Those present then retired to the reception room, and it was a late hour before the company broke up, following the departure of the Duke of York.

Amongst those present were:—
Air-Marshal Sir H. M. Trenchard, Bart., K.C.B., D.S.O., A.D.C., Chief of the Air Staff.

Capt. The Rt. Hon. F. Guest, C.B.E., D.S.O., M.P., Secretary of State for Air; Maj.-Gen. J. E. Dickie, C.B., C.M.G.;

Group-Capt. C. L. Newall, C.M.G., C.B.E., A.M.; Col. Sir W. R. Lawrence, Bart., G.C.I.E., G.C.V.O., C.B.

Lieut.-Cols. F. H. L. Errington, C.B., V.D.; E. B. Gordon, C.M.G., D.S.O.; J. Waley-Cohen, C.M.G., D.S.O.; R. C. Donaldson Hudson, D.S.O.

Wing-Comdrs. J. H. A. Landon, D.S.O., O.B.E.; M. G. Christie, D.S.O., C.M.G., M.C.; Louis Greig, M.V.O.; J. E. A. Baldwin, D.S.O., O.B.E.

Sqdn.-Ldrs. H. R. Nicholl, O.B.E.; J. C. Quinnell, D.F.C.; J. Ryan, C.B.E.; W. W. Shorten, F.R.C.S.; W. G. P. Young, O.B.E.

Majors Nathan; W. T. Blake; C. C. Turner; A. Murray; F. M. Iredale; T. Vincent Smith, M.C.; E. K. Brown.

Flight-Lieuts. R. Addenbrooke-Prout, O.B.E., M.C.; F. G. Stammers, O.B.E.; C. B. Dick Cleland; R. C. Savery, D.F.C.; R. Halley, D.F.C., A.F.C.; T. G. Gordon, M.B.E.; A. Bengé; Alec Grey; W. B. Farrington, D.S.O., and Roche.

Cpts. T. B. Marson, M.B.E.; H. W. M. Paul, M.C.; P. W. Rutherford; L. C. Bygrave; D. Brunt; J. W. Beebee; R. J. Gammon, D.F.C.; E. D. Harding.

Flying-Officers T. E. Jenyns; E. J. McLaughlin; M. Burbridge; A. Perny Keene; T. G. A. Hawley; G. T. Griffith.

Messrs. C. G. Grey; Stanley Spooner; Norman; Lionel Turner; J. L. Stuart-Gill; C. A. Stevens, M.C.; W. A. Herbert; O. M. D. Bell; H. Gardiner Hill; D. P. Jones; S. Chambers; K. F. Pedley; A. R. Macdonald; R. H. Collier; Norman Offord; T. J. Carroll; W. W. Bradford; E. F. van der Liet; R. Stanley-Smith; Alec Matthews; J. A. Cairns; H. C. Pyper; L. Pitts; S. C. Crowe; F. C. Wareham.

PERSONALS

Married

Wing-Commander VERE BETTINGTON, C.M.G., R.A.F., was married on June 14, at Christ Church, Stafford Street, to FLORENCE EVELYN, daughter of the late Sir WILLIAM S. and Lady WRIGHT, of The Holt, Scalby, Yorks.

Squadron-Leader GEORGE THOMSON, O.B.E., R.A.F., son of the late Major J. Thomson and Mrs. Thomson, Runwell, Essex, was married on June 16 at Holy Trinity Church, Brompton, to OCTAVIA, youngest daughter of the late Mr. and Mrs. DIGBY CAYLEY, of Norton Grove, Malton.

To be Married

A marriage has been arranged, and will shortly take place, between Major C. H. STRINGER, D.F.C., late 5th Royal

Irish Lancers, second son of Mr. G. E. Stringer, Barton Hall, Kettering, Northamptonshire, and LORIE, BARONESS V. OMPTEDA, widow of Robert, Baron v. Ompeda, and fifth daughter of the late Hon. W. and Mrs. Winter Irving.

Items

SIR MARCUS SAMUEL, on whom a peerage was conferred in the birthday honours, will take the title of Baron Bearsted of Maidstone, in the County of Kent.

Rear-Admiral Sir CECIL LAMBERT, Director of Personnel at the Air Ministry, has been promoted, following the retirement of Vice-Admiral George A. Ballard, C.B., to be Vice-Admiral in H.M. Fleet.

THE LONDON-CONTINENTAL SERVICES

FLIGHTS BETWEEN JUNE 12 AND JUNE 18, INCLUSIVE

Route†	No. of flights*	No. of passengers	No. of flights carrying		No. of journeys completed†	Average flying time	Fastest time made by	Type and No. (in brackets) of Machines Flying
			Mails	Goods				
Croydon-Paris ...	41	150	8	23	41	2 26	Goliath F-GEAC (1h. 47m.)	B. (7), D.H.4 (1), D.H.18 (2), G. (5), H.P. (3), Sa. (2), Sp. (3), V. (1).
Paris-Croydon ...	42	181	18	25	38	2 54	Breguet F-ADAH (2h. 15m.)	B. (7), D.H.4 (1), D.H.18 (2), G. (5), H.P. (3), Sa. (1), Sp. (5), V. (1).
Croydon-Brussels ...	8	8	4	4	8	2 18	D.H.4 G-EAXE (1h. 54m.)	D.H.4 (5), D.H.9 (2).
Brussels-Croydon ...	7	11	5	7	7	2 41	D.H.9 O-BELG (2h. 25m.) ...	D.H.4 (2), D.H.9 (2).
Croydon-Amsterdam ...	6	9	6	6	6	3 44	Fokker H-NABM (3h. 8m.)..	F. (3).
Amsterdam-Croydon ...	6	6	6	5	6	3 35	Fokker H-NABM (2h. 55m.)	F. (3).
Totals for week ...	110	365	47	70	106			

* Not including "private" flights. † Including certain journeys when stops were made en route.
‡ Including certain diverted journeys.

Av. = Avro. B. = Breguet. Br. = Bristol. Bt. = B.A.T. D.H.4 = De Havilland 4, D.H.9 (etc.).
F. = Fokker. Fa. = Farman F.50. G. = Goliath Farman. H.P. = Handley Page. M. = Martinsyde. N. = Nieuport.
P. = Potez. Sa. = Salmson. Se. = S.E.5. Sp. = Spad. V. = Vickers Vimy. W. = Westland.

The following is a list of firms running services between London and Paris, Brussels, etc., etc.:—Co. des Grandes Expresses Aériennes; Handley Page Transport, Ltd.; Instone Air Line; Koninklijke Luchtvaart Maatschappij; Messageries Aériennes; Syndicat National pour l'Étude des Transports Aériens; Co. Transaérienne.

Note.—Paris-bound Handley Page machines depart from Cricklewood.

PROGRESS OF CIVIL AVIATION

Half-Yearly Report

As briefly recorded in our issue of June 16, a report on the progress of civil aviation during the period from October 1, 1920, to March 31, 1921, when civil flying in Britain passed through a difficult phase, was issued on June 13 as a White Paper, bearing the signature of Sir Frederick Sykes, Controller-General of Civil Aviation. The report shows that, in spite of inactivity in some directions, there has in fact been a steady advance in the organisation and development of civil aviation at home and abroad, and that obstacles which were hampering progress are now being overcome. The report, besides dealing with civil aviation in Great Britain, describes the progress that is being achieved in the Dominions, and also, in briefer form, in foreign countries.

International.—It has been arranged that the International Air Convention will be ratified by the British Empire as a whole. One of the reservations adopted by the British Empire will allow Canada freedom of action *vis-à-vis* the United States. Temporary agreements for the control of air traffic have been concluded between Great Britain and Denmark and Great Britain and Sweden, and it is expected that a similar agreement will shortly be signed between Great Britain and Norway.

Organisation.—Further steps have been taken to improve the general ground organisation at the Customs aerodromes at Croydon and Lympne. The installation at Croydon of a night-lighting system to permit regular night-flying on commercial services is now nearly completed, and steps have been taken to provide two new lighthouses on the English section of the London-Paris route.

The value of direction-finding and wireless communication has been proved on many occasions, instances being given in the report.

As a result of the conferences with the French and Belgian air authorities, details and conventional signs, required in aeronautical maps, have been agreed upon, and a preliminary edition of general and local aeronautical maps has been prepared.

The distribution of meteorological information throughout the country has been developed, and an extension of the wireless telegraph facilities has been found necessary, in order to make this possible.

Commercial Services.—From tables in the report it is found that whereas during the six months from April to September, 1920, British air traffic was about four times the foreign traffic, from the beginning of 1921 to the end of March it has been only about one-quarter of foreign traffic, the number of arrivals and departures of British aircraft to and from the Continent having fallen from 1,997 to 644. During the period under review the machine mileage for civil aviation was 212,200 miles, the number of passengers carried 10,103 and the weight of goods 38 tons, as compared to 689,000 miles, 32,345 passengers and 86½ tons for the previous six months. It is significant that the value of imports by air has only fallen from £376,606 to £305,831, and of exports from £168,300 to £167,731.

Thus whereas from April to September, 1920, British air traffic was about four times greater than foreign, from January to March, 1921, it was only about one quarter of the foreign traffic. But a distinct improvement was at once recorded at the latter part of March, 1921, on the re-opening of a British service to Paris, when on an average seven passengers per machine were carried.

Meteorology.—A service of weather reports from ships in the North Atlantic commenced on March 26. The number of distributing stations of the Meteorological Office has now been brought up to twelve by the opening of a station at the Isle of Grain. New marine agencies for organising the collection of meteorological information from ships have been established at Hong Kong, Vancouver and Melbourne.

Pilots and Aircraft, Etc.—The licensing of air personnel and aerodromes and the registration of aircraft have proceeded normally. Up to March 31, 1921, 617 pilots had been licensed and 635 heavier-than-air craft registered.

Research.—Investigations into the use of metals in the construction of aircraft are being continued, and various new types of propellers have been tested, including variable pitch propellers, adjustable during flight, and propellers with metal hubs and detachable blades which can be set at any desired pitch before flight. In the development of engines special attention is being paid to direct fuel injection super-charging and engine starters.

It has been decided to hold an open competition, particulars

of which will be published shortly, for self-sealing and crash-proof petrol tanks.

Dominions and India.—In Australia, an Air Board has been established, and an Air Navigation Bill and Regulations have been brought into force. The Australian Government has approved the operation of an air mail service, and the merits of two routes are being discussed. A private scheme for the establishment of regular air services is also under consideration.

A Canadian-Inter-Departmental Conference has been held to consider the use of aircraft for forest and fishery protection, survey and exploratory work. 7,350 miles of air routes were surveyed during 1920. The trans-Canada flight from Halifax to Vancouver was successfully carried out in October.

The Air Board of India, under the Commerce Department, is a purely advisory body without executive functions. As soon as funds are available, the Government of India has decided to prepare a trunk air route from Rangoon (via Calcutta and Allahabad) to Bombay. When this route, or a section of it, is completed, tenders will be called for for an air mail service over the completed portion. Local governments in India have also been empowered to lay out air routes within their own boundaries.

In New Zealand, contracts have been approved by the Cabinet for an air mail service, between Auckland and Whangarei and between Christchurch and Timaru.

An Air Board has been appointed in South Africa to advise the Government on air questions.

Foreign.—Part 2 of the report reviews the air activity abroad. The most conspicuous features of the period are the increased French subsidies to air transport companies and the energy with which Germany is prosecuting air schemes with the limited resources at her disposal. Although late enemy countries are forbidden to maintain a military air force, Germany, Austria and Hungary will be permitted to retain a number of aerodromes in order to facilitate international commercial aviation.

The French Civil Aviation Vote for 1921 shows a considerable increase on that for 1920 and amounts to Frs. 147,374,012, of which Frs. 31,700,000 is for subsidies to air transport companies, and Frs. 25,575,000 for the construction of two rigid airships, bases and equipment. Beyond this vote, Frs. 4,500,000 have been voted for aviation under the Minister of Colonies. The effect of the French subsidies has been to permit the reduction of single fares from Paris to London to 300 francs, from Paris to Strasburg to 150 francs, and from Paris to Prague to 500 francs. In 1920, 989,270 miles were flown by French aircraft as compared with 221,320 miles in 1919.

The Belgian Government has provided about Frs. 10,000,000 (including Frs. 800,000 for subsidies) for the encouragement of civil aviation. The Société Nationale pour l'Etude des Transports Aériens, now no longer a syndicate but a limited liability company with a capital of Frs. 4,000,000, will secure the greater part of the subsidy, which is allocated on a system similar to that of the French.

The total estimate for civil aviation in Holland amounts to Fl. 715,000. The Koninklijke Luchtvaart Maatschappij is being granted Fl. 200,000 as a subsidy to meet two-thirds of the company's losses in the year 1920-1921. On the Amsterdam-London service operated by this company 584 trips, covering 146,000 miles, were carried out without accident.

Civil aviation in Germany is confined to the use of about 125 ex-military machines, with the exception of the civil type machines specified in the last report. The Government has carried out the instructions of the Inter-Allied Commission of Control by prohibiting the flight to foreign countries of any of these ex-service aircraft, but internal services have been in operation on nine routes. Preparations are being made for a service between Munich and Lake Constance to be extended to Geneva, via Zurich, in conjunction with a Swiss Air Transport Company. The German Post Office pays a subsidy of 21 marks per km. flown on regular air lines.

The Roumanian Minister of Communications has been authorised to sign a contract with a French company, the Franco-Roumaine de Navigation Aérienne, under which the company has the right of air transport in Roumania on the Paris-Strasburg-Prague-Vienna, Budapest-Belgrade-Bucharest, Constantinople air route over a period of 20 years. The agreement carries with it an annual maximum subsidy of 6,500,000 lei to the company in return for certain guarantees, including the placing of its material and personnel at the

disposal of the Roumanian Government in the event of mobilisation.

The conclusion of an air navigation agreement between the Scandinavian States has not yet materialised, although a proposal to this effect is now before the Swedish Parliament. In Norway the Ministry of Defence has issued temporary regulations for civil aviation. The Swedish Air Traffic Commission has submitted a consolidated report, and the Swedish Government has applied for grants in aid of civil aviation amounting to 170,000 kr. for 1921, and 360,000 kr. for 1922, with, in addition, grants of 60,000 kr. and 60,800 kr. to improve the meteorological service.

A Swiss Government Order prohibits aircraft belonging to a country with which Switzerland has not entered into an agreement from flying over Swiss territory. An agreement with Germany was ratified in December, 1920.

Progress has been maintained in the Eastern countries, especially in Japan, where the programme of the Air Bureau includes the consolidation and encouragement of civil aviation, the supervision of private undertakings, and the establishment of an international air route. Civilian pilots are to be trained

at the Military Aviation School, 292 applications having been received for ten vacancies available in 1921.

Among the South American States Argentina and Chile have shown notable enterprise. The Argentine Government has sanctioned the establishment of an important air mail service between Bahia Blanca and Rio Gallegos, while in Chile no less than 565,000 dollars has been raised for founding a civil school of aviation.

The United States has not yet in existence a Government Department or organisation for the control of civil aviation, nor is there a Federal law for the registration of aircraft and the licensing of personnel. To maintain the activities of the Post Office, a sum of \$1,250,000 has been voted for the current year. One company, the Lawson Air Line, is under contract to carry mails over certain routes, and privately-owned services are operated on three other routes.

Appended to the report there is a table of Continental air transport and mail services which contains full details of times of service and scales of charges on 20 air routes. Another appendix to the report gives details of the Customs tariffs on aircraft material imported into various foreign countries.

AIRISMS FROM THE FOUR WINDS

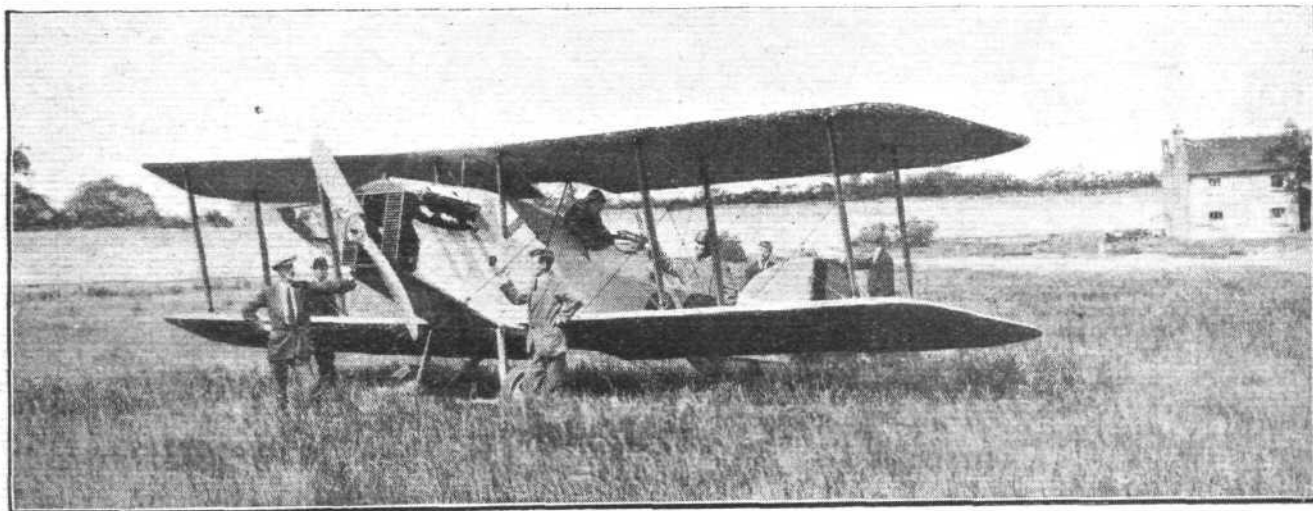
CONGRATULATIONS to Rear-Admiral Murray F. Sueter upon his magnificent majority at East Herts.

ALDERSHOT Searchlight Tattoo, held on Farnborough Common last week, again included an illuminated aircraft display, in which a trio of Bristol fighters took part.

AUSTRALIA is taking the aviation business seriously. As a commencement through the Australian Aircraft Co. of Sydney, the Australian Air Council are building six Avros.

RECENTLY we mentioned the installation, near Cherbourg, of an aeroplane service to handle late passengers for trans-

A FEW weeks ago we recorded the report from Washington of an ex-soldier named Renz having recovered his full power of speech as the result of an altitude flight of 14,000 feet. Apparently there are others, as the U.S. Air Service have since, it is stated, pointed out that Miss Grace Ford, a Roanoke (Va.) girl recovered her singing voice in a similar manner. Miss Ford was one of the first to volunteer for service as an entertainer for the soldiers. Early in 1918 her voice failed her. Every effort to find a remedy failed until she made an aeroplane trip. This was while she was in Lima, Peru. President Leguia had asked her to sing. She was preparing to send her regrets and an explanation, when a former Army officer asked her to accompany him on a flight.



MARTINSYDES FOR SPAIN : One of Martinsyde F.4a (300 h.p. Hispano) two-seater biplanes recently supplied to the Spanish Government. A representative of the Spanish Government was at Brooklands, and made a trip in each of the machines before taking delivery.

Atlantic vessels. From the announcements to hand last week it looks as if the Compagnie Général Transatlantique have gone one better by inaugurating a regular service of 'planes between Le Bourget and Havre to serve the liners Paris and France. These "air-tenders" have accommodation for five passengers and late mails. As from Saturday this week, it is announced that the 'planes will leave the capital every Saturday, returning on Monday with passengers arriving at Havre during the week-end. The fare is to be 200 francs inclusive. The service has been organised by the C.G.T. in conjunction with the Messageries Aeriennes.

When they reached an altitude of 8,000 feet, Miss Ford said she felt a curious sensation of the throat and nose. She said the sensation was akin to nose-bleeding. At 10,000 feet, her throat and nose lost the peculiar sensation. She immediately thought of her voice, and essayed a few notes. To her surprise her voice was clear and audible above the roar of the propeller. Miss Ford that evening sang at the Palace.

It is hardly to be wondered at that, as a result, physicians attached to the Public Health Service are stated to believe there is a tremendous field of possibilities in the investigation of flying curative purposes.

